

# Senior Geophysicist

S10 and S13

The following should be read and used in conjunction with the information pack 'Competence Assurance & Assessment: Introduction for Experienced Freelance Personnel'.

## Evidence Required

- Competence appraisal:** ♦ at Senior Geophysicist level
- Work records:**
- ♦ copy of a preliminary interpretive report written by the candidate that has been submitted to onshore management or the client for a major pipeline/cable route or field development survey
  - ♦ copy of preliminary charts QC'd and approved by the candidate and issued to the client
- Witness testimonies:**
- ♦ One example of the candidate leading by example and demonstrating general safety awareness
  - ♦ One example of the candidate coaching junior personnel in a technical area
  - ♦ One example of the candidate leading a team of geophysicists and taking overall responsibility for planning, QC and preliminary reporting for a major pipeline/cable route or field development survey
  - ♦ One example of the candidate being responsible for technical liaison with the client rep. and directing progress of a major pipeline/cable route or field development survey where necessary
- Essential knowledge:** ♦ written answers to Senior Geophysicist questions
- Curriculum vitae:** ♦ detailing offshore trips, work scope, clients, regions, etc.

## IMCA Framework Requirements

The competence assurance and assessment framework developed by IMCA (the International Marine Contractors Association) sets out a number of elements for each safety-critical position. The following table shows how competence can be demonstrated against each element.

Code	Demonstration	Covered by
S/S10/000/01 <b>Safety Awareness</b>	Demonstrate in-depth knowledge of company health, safety, environmental and quality procedures Ability to plan and perform risk assessments for all safety critical areas in a work environment Ability to perform "toolbox talk" meetings/briefings immediately prior to specific to specific survey operations Demonstrate a commitment to safety by setting an example on safety issues and demonstrating safety leadership to subordinates and work colleagues	CA(a), WT, Q1-3 CA(c), WT, Q1,4 CA(c), WT CA(c), WT, Q1-4
S/S10/000/02 <b>Emergency Procedures</b>	Ability to take appropriate action in the event of an emergency situation Ability to produce coherent and concise reports on emergency situations	CA(a), WT CA(d)
S/S10/000/03 <b>Behavioural Factors</b>	Ability to explain and instruct subordinates in the use of equipment and systems Ability to take charge and show leadership qualities Ability to communicate effectively with client and company management, other team members and supervisor	CA(d), WT CA(d) CA(f), R, WT
S/S10/000/04 <b>IT Skills</b>	Ability to accurately report software and hardware faults and the context in which they are found to the appropriate support staff Ability to define and implement an appropriate backup procedure for raw data and digital interpretation Ability to define hardware and software requirements for particular projects and develop data handling/processing procedures	CA(d) CA(e) CA(e)

Code	Demonstration	Covered by
S/S10/000/05 <b>Seamanship</b>	Ability to instruct personnel in the correct use of safety and survival equipment and aids Demonstrate a practical knowledge of vessel operations	CA(b), WT WT
S/S10/000/06 <b>Prepare Project Procedures and Plans</b>	Ability to prepare project specific procedures in accordance with client specification and project requirements Ability to understand and gather the necessary background information and data (work pack) to undertake the specified work, e.g. existing data, drawings and charts Ability to monitor survey progress at all times and ultimately ensure that the client's requirements are met	CA(e), WT CA(e) CA(f), Q6
S/S13/000/07 <b>Data Acquisition</b>	Ability to plan geophysical data acquisition to ensure compliance with specifications or procedures  Demonstrate a thorough knowledge of the operating principles of geophysical systems Demonstrate a knowledge of the critical elements that can effect geophysical system performance and data quality and how their effects can be minimised	CA(d), (e)  CA(i), WT CA(i), (j), WT
S/S13/000/08 <b>Data Management</b>	Ability to supervise data management activities including final shipment of data	WT
S/S13/000/09 <b>Data Interpretation</b>	Ability to monitor system performance against specification and re-assess quality control criteria in light of field use  Demonstrate a comprehensive understanding of the principles of acoustic and seismic survey techniques Demonstrate a clear understanding of reporting requirements and company procedures for reporting Ability to write a detailed and concise preliminary interpretive report for major pipeline/cable route and field development surveys Ability to check reports against requirements, specifications and related items e.g. charts, data listings etc. Ability to perform detailed quality control checks on geophysical interpretation	WT  CA(j) CA(g), (i) CA(k), R CA(g) CA(j)
S/S13/000/10 <b>Data Presentation</b>	Demonstrate a clear understanding of reporting requirements and company procedures for reporting Ability to write a detailed and concise survey field report Ability to check reports against requirements, specifications and related items e.g. charts, data listings etc.	CA(e), (k) R, CA(k) WT
S/S13/000/11 <b>Survey Principles</b>	Ability to understand and tutor junior personnel in complex survey principles and how they can affect survey data and results.	WT

Q Question (written answer required)

CA Competence Appraisal Form

R Record of work; document or product

WT Witness Testimony

## Sample Achievement Record

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Candidate name: .....

First assessor name: .....

	Assessment Decision	Approval of Internal Verifier/ Competence Focal Point
Safety		
Emergency Procedures		
Behavioural Factors		
IT Skills		
Seamanship		
Prepare Project Procedures and Plans		
Data Acquisition		
Data Interpretation		
Data Presentation		
Survey Principles		

Comments:

First assessor signature: ..... Date: .....

Verifier signature: ..... Date: .....

## Sample Competence Appraisal

The appraiser must have observed the appraisee completing the task before completing the relevant section. Where necessary a number of different appraisers may be used to complete the form fully.

Appraisee name: .....

Task	Feedback to Appraisee	Appraiser <i>(Print name, sign and date)</i>
<p><b>a) Demonstrate safety and emergency awareness, familiarisation with worksite and ability to identify hazards.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>b) Lead by example and coach other personnel in general safety awareness.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>c) Lead risk assessment teams and chair toolbox talks for operational tasks.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>d) Maintain effective teamwork and communication, including the supervision of all geo staff on project.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>e) Prepare project procedures and gather necessary data, drawings, charts etc.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>f) Monitor survey progress and ensure clients requirements are met.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		

Task	Feedback to Appraisee	Appraiser <i>(Print name, sign and date)</i>
<p><b>g) Have wide knowledge and experience of a variety of types of survey projects carried out for different applications.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>h) Have good background knowledge of the oil and gas and submarine cable route industries.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>i) Demonstrate a thorough understanding of acoustic and seismic surveying techniques and systems, and data processing and interpretation methods.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>j) Be able to perform detailed quality control checks on geophysical interpretation and be responsible for reporting critical results to client.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>k) Be able to produce a preliminary interpretive report for a major pipeline route/cable route or field development survey to the appropriate standard for issue to the client.</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>		
<p><b>Projects</b></p> <p>Indicate which projects you have participated in during the last 12 months</p>		
<p><b>Projects</b></p> <p>Performance is exceptional <input type="checkbox"/></p> <p>Performance is competent and dependable <input type="checkbox"/></p> <p>Additional skills or experience required <input type="checkbox"/></p>	<p>N.B. Feedback should be based on projects ticked above</p>	

Task	Feedback to Appraisee	Appraiser <i>(Print name, sign and date)</i>
<b>Hardware/Software</b>  Indicate which hardware and software you have used during the last 12 months		
<b>Hardware/Software</b>  Performance is exceptional <input type="checkbox"/> Performance is competent and dependable <input type="checkbox"/> Additional skills or experience required <input type="checkbox"/>	N.B. Feedback should be based on software / hardware ticked above	

Appraisee comments:

Appraisee signature:

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Date:

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## Essential Knowledge – Sample Questionnaire

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- 1 If a shift team member approached you with a safety concern how would you respond and follow-up?  
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- 2 If a member of your shift team is feeling physically un-well what actions would you take?  
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- 3 If a member of your shift team is acting out of character or is un-communicative what actions would you take?  
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- 4 What are the definitions of hazard and risk? What steps are required to be taken to complete a risk assessment and how are risks evaluated?  
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- 5 How can you best discover the limitations and abilities of a trainee on your shift?  
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- 6 What actions can you take to ensure that a co-operative relationship is maintained between the client's representative, company management and the survey team?  
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- 7 List some critical factors which affect the selection of a route for a submarine cable.  
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- 8 In the oil and gas sector what are the most important aspects of a semi-sub/jack up/platform survey?  
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- 9 Provide some examples of geohazards you may expect to find in a deep water environment and how they would be recognised on geophysical data?  
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10 What are the implications of using uncalibrated sensors offshore?

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11 For sub-surface positioning, quote the expected accuracies for the following systems:

- a) EHF acoustics .....
- b) MF acoustics .....
- c) LUSBL .....
- d) USBL .....
- e) HiPAP .....

12 When calibrating the USBL system with a vessel spin, what shape would you expect to see traced on the navigation screen by the transponder if there was an error in the applied system offsets, assuming that the pitch, roll and azimuth corrections were good?

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13 Describe how standard deviation of a position fix can be used as an indication of quality.

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14 Explain the implications of origin when using UTM co-ordinate system (e.g. 3° East and 3° West)

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